

## EDITORIAL ARTICLES.

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### INJURIES OF THE HEART.

Injuries of the heart are usually considered so little amenable to surgical interference that they receive but little attention in surgical literature. It is believed that a further advance may at some future time include this organ in the number of those subject to surgical action. In order to increase the amount of the available data bearing upon this subject, the following recent cases are presented without other remarks than may have been made by the operators.

CASE I. *Perforating Stab Wound of the Heart ; Recovery.*<sup>1</sup>—A Caucasian Cosack, in a drunken fight with a comrade, was stabbed in his chest with a dagger, the accident taking place on the street, close to Dr. Kravkoff's lodgings. Having instantly arrived at the spot, the author found the man lying on the ground in a formidable pool of blood, deadly pale, in an insensible state, with stertorous breathing. He was still profusely bleeding from a clean-cut transverse wound,  $1\frac{1}{2}$  inch long, situated in the left 4th intercostal space, 1 cm. above the nipple, on the mammillary line. The haemorrhage was at once stopped by means of a compressing bandage. Under the influence of analeptics, the man soon recovered his senses, and could be, without delay, carried to a casualty station. On a closer examination on the next morning the cardiac dulness proved to be considerably enlarged both vertically (reaching upward to the 4th and downward to the 7th rib) and horizontally (from the right parasternal line to a point  $1\frac{1}{2}$  finger's breadth outside of the mammillary line). When the patient lay on his back, the cardiac dulness became narrowed ; when on his right side, the left border of the dulness receded toward the right, and when on his left

<sup>1</sup>Dr. A. P. KRAVKOFF (Riazan, Russia) in the *Russkaia Meditina*, No. 42, 1887

side, the right border receded toward the left. The apex-beat was neither visible nor palpable ; the pulse (90) weak and small ; the cardiac sounds indistinct, especially the systolic, which was replaced by "a gurgling murmur," heard most distinctly about the apex in the 6th interstice. Taking all the facts into consideration, Dr. Kravkoff came to the conclusion that he had to deal with a perforating stab wound of the pericardium and the anterior wall of the left ventricle, with consecutive hæmo-pericardium. In a couple of days the man's general state was thought to be sufficiently strong to safely permit his removal to a lazaretto near by. After a four weeks' stay he was discharged quite well and at once joined his regiment to resume the Cosack's usual duties. About five days after the discharge the unhappy man (human life being the cheapest article in Russia) was ordered to perform some severe task, and when attempting to lift up a heavy object from the ground fell, as if struck by lightning, and instantly died in slight convulsions. At the *post-mortem* examination, Dr. Kravkoff found the cutaneous wound healed by a firm scar of a bluish color. The parietal layer of the pericardium was adherent to the thoracic wall, while the pericardial cavity was distended by two tumblersfuls of dark fluid blood. On the anterior wall of the left ventricle there was present a transverse rent penetrating through its whole thickness and measuring  $1/2$  inch in length, the serous edges of the rupture being thickened from the proliferation of fibrous tissue, while the muscular ones all round presented fatty degeneration and atrophy of muscular fibres. The papillary muscles and chordæ tendineæ of the mitral valve were shrunken and shortened from a recent localized endocarditis. Analyzing this highly remarkable case, Dr. Kravkoff justly concludes that (1) his diagnosis, as established during the patient's life, was quite correct ; (2) that the formidable lesion of the heart had completely healed ; and (3) that death followed from the young scar giving way under the influence of a sudden violent increase of the intra-cardiac pressure, caused by a powerful muscular effort.

CASE 2. *Gun-shot Wound of the Heart ; Survival for 10 days.*<sup>1</sup>

<sup>1</sup>Dr. TCHEKUNOFF (Nijni Tchirskala Stanitza Russia), in the Proceedings of the Don Medical Society for 1887.

—A boy, æt. 3 years and 10 months, was accidentally shot, the patient standing 1 foot from the weapon. The wounded boy remained erect at the spot for about 5 minutes, and then lost consciousness and fell down, bleeding from the wound. The haemorrhage was soon arrested with fingers by his father. Having arrived one-half hour later, Dr. Tchekunoff found the child still unconscious, lying on his back, with cyanotic face, cold limbs, irregular, scarcely perceptible breathing, and filiform pulse. About 1 cm. above the right nipple, between the 3d and 4th ribs, there was seen an irregular wound, measuring 1 sq. cm., from which blood was oozing drop by drop, and which admitted a probe only for 1 cm. Under the influence of analeptics, the boy recovered his senses in one-half hour and was able to relate the accident. From the 3rd day there appeared febrile movements (38°-39° C.) and acceleration of breathing (70-80 per 1'), while from the 4th there supervened symptoms of ascending pneumonia gradually invading the whole right lung, and on the 5th day albuminuria. The boy complained of pain about the wound. But the cardiac sounds and rhythm remained quite normal all through, and the boy's general state was fairly satisfactory up to the 9th day. Later on, the pulmonary symptoms rapidly grew worse, cyanosis increased, there appeared progressive prostration, and on the 11th day the child died. Up to the 8th day the pulse had been from 64 to 88; and only later rose up to 112. At the *post-mortem*, on the outer surface of the pericardium there was found a piece of the boy's jacket sticking to a scar underneath. The pericardial cavity contained a little bloody serum, while on the anterior wall of the left ventricle there was seen an obliquely running groove, at the inner extremity of which a bullet, weighing 30 grains, was embedded. Otherwise the heart was healthy. Dr. Tchekunoff had not suspected the cardiac lesion during the child's life, since the cardiac rhythm and sounds had not presented anything abnormal. The relative slowness of the pulse during the first seven days is ascribed by him to "an irritating action of the foreign body on the inhibitory apparatus of the heart."

CASE 3.—*Gunshot Wound of the Heart. Death from Phthisis on the 158th day.*—A middle aged policeman was found after midnight,

Dec. 30th, lying on the pavement in an unconscious state, about three hours after having been shot by an unknown person.<sup>1</sup> He recovered his senses on the way to the Irkutsk Town Hospital and was even able to ascend a stair-case, with some support, but he could not speak and only groaned from agonizing pain about the left side of the chest. On examination, there was detected a bullet wound, situated at the junction of the 5th left rib with the sternum and giving vent to air and bloody foam on respirations. There was, further, an intense subcutaneous emphysema over the whole left side of the thorax. The breathing was quickened, the pulse irregular and weak, the temperature subnormal. The man was very pale, complained of pain and occasionally coughed, expectorating scanty sputum slightly tinged with blood. The cardiac sounds were weak, but clear at the time. Dr. Zisman ordered absolute rest, ice externally and internally, valerian, brandy or sherry, morphine or codeine, milk diet and iodoform gauze dressing. In the course of the first 15 days the man gradually greatly improved; pain, bloody expectoration and emphysema disappeared, the pulse became normal, he slept and ate well, and markedly gained strength, his subjective feeling remaining excellent. On the 12th day, the bullet could be felt embedded amidst the muscles posteriorly, about the middle of the left 6th rib. On the 15th, there were first heard slight systolic and diastolic murmurs at the cardiac apex as well as along the large vessels, while the cardiac dulness proved to be somewhat enlarged transversely. On the 16th day, there suddenly occurred giddiness, dyspnea with profuse perspiration, and paralysis of the left leg which in a few days became deadly pale, cold and excessively painful. On the 20th day, it became evident that the leg was affected with dry gangrene. On the 21st, an epileptoid fit occurred, to be followed by an ascending dry gangrene of the right leg, too. About the 35th day, the demarcation lines were found quite distinct on both sides (on the right, across the knee; on the left, about the upper third of the leg). The patient suffered from pain and mild fever, sleeplessness and loss of appetite, and was rap-

<sup>1</sup>DR. L. S. ZISMAN (Irkutsk, Siberia) in the Proceedings of the Irkutsk Medical Society for 1887.

idly losing flesh and strength. In view of the latter circumstance as well as in view of the patient incessantly imploring to cut off his dead limbs, it was decided to perform the operation (and that under chloroform, since the pulse was quite regular). On the 44th day, Dr. Zisman, assisted by six colleagues, made the amputation of the left thigh about its lower third, after which Dr. Solonoff amputated the left leg below the knee. The operations lasted 78 minutes ; the patient bore everything fairly well. In a few days, however, in both of the stumps there appeared a partial gangrene of the soft tissues, the sloughs falling away one on 64th, and the other on the 74th day, after which a healthy cicatrization set in. But the patient's state did not improve at all. On the contrary, a fulminant pulmonary and intestinal tuberculosis developed to end in death on the 158th day after the accident. The post-mortem examination showed that the bullet had perforated the anterior thoracic wall, entered the pericardiac cavity, made a deep groove, about  $1\frac{1}{2}$  finger's breadth long, in the anterior and adjoining outer wall of the left ventricle, afterward pierced the outer wall of the pericardial sac and went through the whole thickness of the left lung to bury itself amidst the spinal muscles at the already mentioned spot. The anterior portion of the pericardium was found firmly adherent to the thoracic wall in front, to the heart behind. The bullet track from the entrance to the heart was represented by a very dense cicatrical cord, and the pericardial entrance and exit points by oval holes of the size of a big pea, with smooth cicatrical edges. The bullet groove in the heart was filled up with firm connective tissue ; at this spot, almost the whole cardiac wall consisted of the cicatrical tissue alone, only a very thin muscular layer remaining from the myocardium, while the subjacent endocardium was extremely thickened and dense. The left lung was extensively adherent to the anterior thoracic wall. The pulmonary apices were occupied by large cavities with purulent and caseous contents. The intestines presented a number of tuberculous ulcers. Concluding the description of his highly remarkable and instructive case, Dr. Zisman emphasizes the circumstance that "his patient, having completely recovered from a formidable lesion of the heart, succumbed from phthisis which had developed on the ground of a prolonged profuse suppuration."

CASE 4.—*Traumatic Rupture of the Heart (Septum Ventriculorum)*.<sup>1</sup> This is the fourth recorded case of the kind. The other three are: 1. Giraldès' case of a boy, æt. 12, who fell from the top of a house and died in 4 hours from the rupture of the upper portion of the healthy septum. 2. Prescott Hewitt's case of a child of 5, who got under the wheels of a vehicle and died in  $\frac{1}{2}$  hour from the rupture of the healthy septum at the junction of the middle third with the lower; and 3. Markham's lethal case of rupture of the septum, caused by a fall from an omnibus' top. A powerfully built, always strong and healthy railway shunter was caught between two buffers. When seen shortly after the accident, he was in a semiconscious state, prostrate, pale, suffering from extreme dyspnoea as well as thoracic and epigastric pain, his lips being cyanotic and the pulse weak, small, irregular, uncountable. Auscultations revealed the presence of a loud continuous murmur replacing both the systolic and diastolic sounds; the sounds of the aorta and pulmonary artery were also obscured by murmurs. The pain was especially severe and intensified by pressure along the left axillary line, between the 6th and 8th ribs. No external injuries were visible. The urine contained albumen, leucocytes and red blood corpuscles. Very soon there supervened haemoptysis, a steadily increasing extreme cyanosis, and crepitant *râles* over the lungs, while dyspnoea continued to grow worse and the cardiac murmurs became ever louder (could be heard not only anteriorly, but also posteriorly and through the lateral thoracic wall). Oedema was absent. The man remained all the time in a semirecumbent posture (with his feet hanging down), visibly avoiding any slightest alteration in his position or any movement in general. On the 15th day he died from pulmonary oedema. At the *post-mortem* examination, the pericardium was found to contain 2 ounces of sanguinolent fluid. The heart measured  $13\frac{1}{2} \times 13 \times 5$  cm. There were three echymoses on its anterior wall. The auricles and left ventricle were filled up with clots. In the septum ventriculorum, close to the cardiac apex, there was present a perforation which freely admitted a finger and had rounded off edges. The

<sup>1</sup>DR. GAVREL I. POPOFF (St. Petersburg) in *Ejenedelnaia Klinicheskaiia Gazeta*, Nos. 9, 10 and 11, 1888.

thickness of the septum was about 3 or 4 millim., that of the left ventricular wall 12 millim. The muscular substance as well as the valves, and intima of the aorta were quite healthy. There were found, further, ruptures of the spleen, lungs and kidneys. Discussing the mechanism of the lesion, Dr. Popoff comes to the conclusion that the rupture took place during the early period of a cardiac systole, when the ventricles were filled up with blood *ad maximum*, and the cardiac muscle was in a contracted state. The systolic rise of the intracardiac tension was suddenly highly increased by a violent compression of the chest between the buffers. The blood tension in the left ventricle being greater than in the right one, the compressed mass of blood forced its way from the former toward the latter through the septum at a comparatively thinner wall, the left ventricle's walls being somewhat hypertrophied from his heavy professional work.

CASE 5.—*Traumatic Rupture of the Heart (Right Ventricle).*<sup>1</sup> A male peasant, æt. 50, while lying drunk on the pavement near his hut, was violently struck in the chest with a clenched fist by another peasant. The patient hurriedly rose up, shouted loudly, "you beat me!" and stepped into the hall of his hut to die 15 minutes later. At the necropsy, there was found a recent superficial quadrangular excoriation over the ensiform cartilage, measuring  $4\frac{1}{2} \times 1\frac{1}{2}$  cm. The pericardium was distended with fluid blood and scanty flabby clots, while on the posterior surface of the right ventricle, just above the apex, there was present an irregular, slightly gaping rent, 1cm. long, penetrating into the cavity of the ventricle, its edges being œdematos. The adjacent visceral pericardial layer showed an ecchymosis of the size of a shilling piece. The cardiac muscle was somewhat enlarged, flabby, pale and yellowish, the venous valves slightly cartilaginous, the cavities empty. Dr. Bryzgaloff draws attention to the facts, (1) that traumatic rupture of the heart occurs but very rarely; at all events, by far less frequently than that of the liver, spleen, kidney or lung; (2) that traumatic rupture of the right ventricle occurs by far more rarely than that of the left one (of 51 cases of cardiac rupture, collected by

<sup>1</sup>DR. BRYZGALOFF (Kostroma, Russia) in the Proceedings of the Kostroma Medical Society, June 23, 1888.

Fischer, only 4 refer to the right ventricle); (3) that in his case there were present such predisposing causes as fatty degeneration of the muscular substance with hypertrophy of the heart and thickening of the valves, increased cardiac action and intracardiac pressure under the influence of alcohol; (4) that the rupture took place during an early stage of a systole, since there was present a pericardial ecchymosis which evidently had resulted from violence having occurred at the moment when the heart had been as near as possible to the thoracic wall; (5) that the fatal issue was caused by the heart having been compressed and arrested by the blood extravasated into the pericardial sac.

VALERIUS IDELSON.

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#### THE TREATMENT OF CEREBRAL ABSCESS.

At a meeting of the Berlin Medical Society, Dec. 5, 1888, Professor von Bergmann<sup>1</sup> presented a patient on whom he had successfully opened the cranial cavity for the evacuation of a previously diagnosed abscess. He stated that cerebral abscess was never a primary disease, but always secondary, and so a sequence to some antecedent trouble. These pre-existing troubles always exist, and are often markedly characteristic. The so-called idiopathic abscesses are usually the products of cerebral tuberculosis, though tubercular deposits appear as a rule as dry caseous masses, and rarely go on to the formation of sufficient pus to give rise to the symptoms of abscess.

There are three disturbances which precede the formation of abscess in the substance of the hemispheres. These are 1. Purulent processes in and around the cranial bones. 2. Injuries of the soft parts, of the bones of the skull, and its contents. 3. Suppuration in the course of the lesser circulation, such as abscess of the lung, fetid bronchitis, severe and protracted empyema.

Among these three etiological factors, suppuration in the mastoid, otitis media suppurativa plays the most important part and is responsible for nearly one half of the cases.

The greatest number of cases of cerebral abscess, consequent to

<sup>1</sup>Deutsche Med. Wochenschrift, No. 50, 1888.